ATLAS
fires

DATE: June 12, 1980   MON 3-1-6

SUBJECT: Fugitive Dust Emissions from Atlas Asbestos

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As reported in the EPA inspection report of 2/13/80, fugitive dust emissions from the uncontrolled tailings pile have been estimated at 179.4 tons per year. These emissions represent approximately 83 percent of the total estimated asbestos emissions. Bulk samples of material collected on the surface of the tailings pile during the 3/27/80 inspection, have been shown to contain from 25-40 weight percent of chrysotile asbestos.

The concern I have is that there may be a possibility for these fugitive emissions to be transported by the prevailing westerly winds into the Coalinga area, about 18 miles southeast of Atlas Asbestos. With this thought in mind, I contacted Mr. Richard Thuillier, the EPA's regional meteorologist who is under contract from SRI. Mr. Thuillier was able to provide a wind-rose indicating the relative wind direction and speed for the Monterey and Coalinga areas (attached). An analysis of these data by Mr. Thuillier indicated that in the vicinity of Atlas Asbestos, the prevailing wind flow is from the west through the northwest. The wind-rose from Monterey indicates the greatest frequency of occurance, approximately 34 percent of the time, for winds from these directions. Mr. Thuillier also stated that, "In the absence of terrain barriers, this flow would be expected to carry pollutants emitted by the plant toward Central Valley population centers such as Coalinga. In fact, the coastal terrain frequently deflects the prevailing flow and shields areas such as Coalinga from the full effect of upwind pollution sources in the coastal range. Nevertheless, the wind-rose from Coalinga indicates flow from the west through northwest as much as 6.3 percent of the time. While these statistics of wind flow support the possibility of an impact in Coalinga, quantification of the magnitude and frequency of impact will require a more detailed investigation."
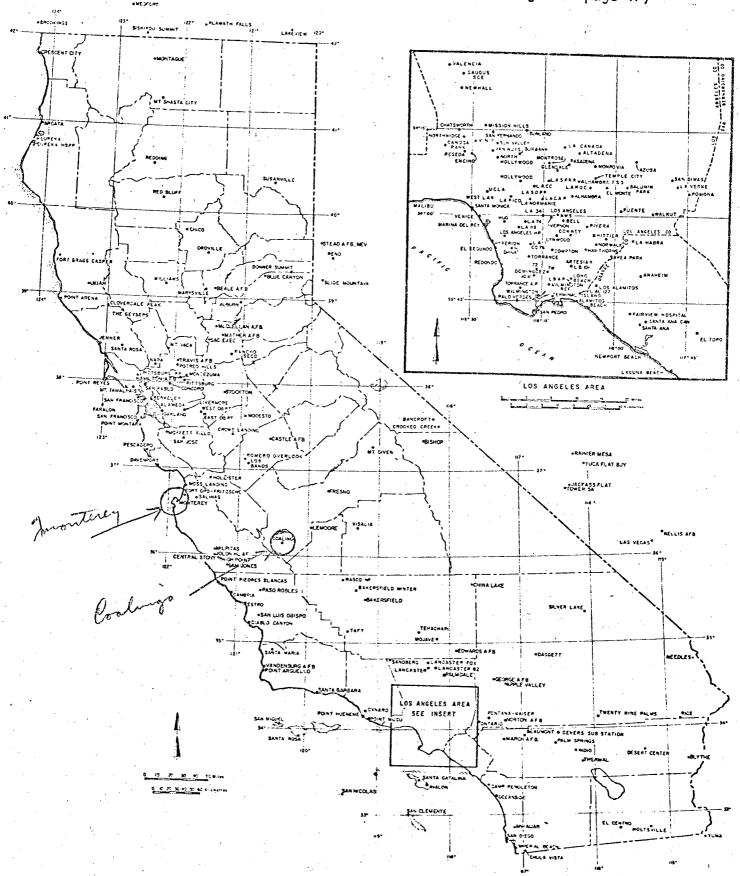
Therefore, the potential exists for fugitive asbestos dust emissions to be transported by the prevailing westerly winds into the Coalinga area. This premise is supported by Laamanen, et al., 1965[1], who reported that studies of air pollution in the vicinity of asbestos mines and mills in Finland indicated small amounts of asbestos dust as far away as 27 km (about 17 miles). A simplified 'drift distance' calculation for two sizes of asbestos fibers, has been made by Levine, 1978[1]. Fibers were presumed to be injected into a constant crosswind of 10 miles/hour at a height of 50 feet with no net effect due to turbulence. A rural location was assumed with a 'roughness height' equal to that of a wheat field. Under such conditions, a small fiber (0.1 um x 100 um) would drift 1120 km (about 695 miles), while a larger fiber (1 um x 50 um) would drift 13.3 km (about 8 miles).

The health implications and risks involved with the inhalation of asbestos fibers have been well documented in the literature and need not be addressed here. Based on the possibility of the general public being exposed to asbestos emissions from the uncontrolled tailings pile, the following recommendations are made:

(1)   A qualified person(s) should be assigned the tasks of evaluating the tailings site and recommending appropriate remedial measures, and

(2)   Because a fairly high level of asbestos was detected in stream water near the plant (approximately 3 trillion chrysotile fibers per liter), an extensive literature search should be initiated with respect to the adverse health effects associated with the ingestion of asbestos fibers.

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[1]as cited in: Michaels, L. and S. S. Chissick (1979), Asbestos - Properties, Applications, and Hazards, Vol. 1, Pg. 175, John Wiley & Sons, LTD.

FIGURE 1. LOCATION OF WIND SUMMARIES, SEPTEMBER 1977
220 Stations with Wind Records Summarized in this Bulletin
(See Table 1 for alphabetical listing; summaries begin on page 47)

SURFACE WINDS

PERCENTAGE FREQUENCY OF WIND
DIRECTION AND SPEED
(FROM HOURLY OBSERVATIONS)

23245	MONTEREY, CALIFORNIA NWSED	45,48-69	ALL
STATION	STATION NAME	YEARS	MONTH

	ALL WEATHER		ALL
	CLASS		HOURS (L.S.T.)

36°36', 121°52', 168'
LOCATION

8'
HEIGHT ABOVE GROUND

SPEED (KNTS) DIR.	1 - 3	4 - 6	7 - 10	11 - 16	17 - 21	22 - 27	28 - 33	34 - 40	41 - 47	48 - 55	≥56	%	MEAN WIND SPEED
N	1.8	2.1	1.0	.2	.0	.0						5.1	4.8
NNE	.6	.5	.2	.0	.0							1.3	4.1
NE	.6	.4	.2	.0							.0	1.2	3.9
ENE	.4	.3	.1	.0	.0	.0						.8	4.1
E	1.8	1.7	.6	.1	.0	.0	.0					4.1	4.2
ESE	1.7	1.6	.5	.0	.0	.0						3.8	4.2
SE	2.2	1.7	.5	.1	.0	.0	.0					4.5	4.1
SSE	1.2	.9	.3	.1	.0	.0	.0					2.6	4.7
S	1.6	1.2	.5	.3	.1	.0	.0					3.7	5.3
SSW	1.1	1.2	.5	.3	.1	.0	.0	.0				3.2	5.8
SW	2.2	2.7	1.6	.7	.1	.0	.0	.0				7.3	5.9
WSW	1.6	2.6	1.9	.5	.1	.0						6.8	6.0
W	2.7	4.3	3.8	1.0	.1	.0	.0				→	11.8	6.2
WNW	1.7	2.8	3.0	1.1	.1	.0					→	8.7	6.8
NW	2.6	4.1	4.6	1.7	.2	.0	.0				→	13.3	7.0
NNW	1.7	2.8	2.3	.6	.0	.0	.0					7.4	6.1
CALM												14.4	
14.4	25.5	30.8	21.5	6.8	.8	.2	.0	.0			.0	100.0	4.9

TOTAL NUMBER OF OBSERVATIONS 154998

SURFACE WINDS

PERCENTAGE FREQUENCY OF WIND
DIRECTION AND SPEED
(FROM HOURLY OBSERVATIONS)

STATION			
Coalinga, CA (STATION NAME)	Jan. 1932 –thru Dec. 1932 (YEARS)	ALL (MONTH)	

ALL WEATHER
CLASS

36°08', 120° 21', 676'
LOCATION

HEIGHT ABOVE GROUND

HOURS (L.S.T.)

SPEED MPH DIR.	4-15	16-31	>31									%	MEAN WIND SPEED
N	5.2	0.6										5.8	
NNE	2.8	0.1										2.9	
NE	12.6	0.1										12.6	
ENE	0.7											0.7	
E	11.2	0.1										11.3	
ESE	0.4											0.4	
SE	3.9											3.9	
SSE	0.6	0.1										0.7	
S	7.6	1.0	0.0									8.6	
SSW	1.3	0.4										1.7	
SW	8.5	0.6										9.0	
WSW	0.6											0.6	
W	3.2	0.2										3.4	
WNW	0.1	0.2										0.3	
NW	2.5	0.1										2.6	
NNW	0.4											0.4	
CALM	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	✕	35.2	
	35.2	61.5	3.3	0.0								100.0	

TOTAL NUMBER OF OBSERVATIONS 2,532

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